

IMPERIAL
DEPARTMENT OF AGRICULTURE
FOR THE WEST INDIES



REPORT
ON THE
AGRICULTURAL DEPARTMENT
DOMINICA.
1925-26.

ISSUED BY THE IMPERIAL COMMISSIONER OF AGRICULTURE
FOR THE WEST INDIES.

1927

Price Sixpence.]



REPORTS
ON THE
BOTANIC STATION ECONOMIC
PLOTS, AND AGRICULTURAL
EDUCATION DOMINICA

Annual Reports on Certain Economic Experiments conducted in connection with the Botanic Station, 1900-2.

Annual Reports on the Botanic Station for the years 1901 and 1902,

Annual Reports on the Botanic Station, Economic Experiments, and Agricultural Education for the years 1902-3 to 1921-22.

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LETTER OF TRANSMITTAL.

Imperial College of Tropical Agriculture,
Trinidad, 7th January, 1927.

His Honour
The Administrator,
Dominica.

Sir,

I have the honour to forward the Report of the working of the Agricultural Department, Dominica, for 1925--26, which has been prepared by Mr. F. G. Harcourt, Curator and Agricultural Superintendent of Dominica.

2. The Report deals with the Botanic Gardens and the work in connection with the distribution of plants of economic value. It is interesting to observe that an increased demand for lime seedlings has arisen and that on the Leeward side the lime plantations continue to yield fairly well in spite of the "withertip" disease. The results of the manurial, cultural and mulching experiments on other crops are noted with interest.

3. Among the minor crops it is interesting to note that progress seems to have been made in tobacco cultivation and the formation of a Tobacco Growers Co-Operative Association and a central curing depot is a step in the right direction.

4. The report also includes an account of recent plant legislation and particularly note is made of that referring to the vanilla crop.

5. The customary meteorological returns are also included and details of administration.

6. In conclusion attention is drawn to the fact that Mr. Joseph Jones has now retired after a period of 33 years service, during which time he rendered excellent service to the cause of agricultural improvement in general and to Dominica in particular.

I have &c.,

(Sgd.) G. EVANS,

Acting Imperial Commissioner of Agriculture for the West Indies.

LETTERS OF TRANSMITTAL

Respectfully,
Very truly yours,
[Signature]

His Excellency
The Governor
Honorable

60

I have the honor to acknowledge the receipt of your letter of the 10th inst. in relation to the proposed amendment to the constitution of the State of New York, and in reply to inform you that the same has been forwarded to the proper authorities for their consideration.

I am, Sir, very respectfully,
Your obedient servant,
[Signature]

Very truly yours,
[Signature]

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STAFF OF THE AGRICULTURAL DEPARTMENT, DOMINICA.

F. G. HARCOURT, F.R.H.S.	Agricultural Superintendent and Curator of the Botanic Gardens and Experiment Station.
J. W. WRIGHT	Assistant Curator.
J. C. BRUNEY	Agricultural Instructor.
A. C. WINSTON	Agricultural Instructor.
F. J. BAPTISTE	Foreman.
S. J. BAPTISTE	Overseer.
G. A. WINSTON	Clerk.

REPORT ON THE AGRICULTURAL DEPARTMENT DOMINICA.

For the Year ended March 31, 1926.

Work in the Gardens and Observations on Plants

The Botanic Gardens, Experiment Station, and Nurseries have been kept in good order throughout the year.

There is little to report in the way of improvements in the Gardens, beyond the remetalling of the Main Drive. The strict need of economy still prevails and much desired improvements have again to be postponed, as also the purchase of Garden seats much needed for the benefit of visitors.

A striking exotic plant which flowered for the first time in these Gardens was the "scarlet plume" (*Warszewiczia coccinea*). Nine plants of this very attractive tree were presented to the Gardens by the United States Department of Agriculture in the year 1923.

The tree is vividly described by Spruce in his "notes of a Botanist on the Amazon," his description being as follows:—"A handsome Rubiad, with long rampant stems, rufous bark peeling off in thin flakes, large opposite leaves and flowering peduncles one to two feet long, thickly beset with cymules of small yellow flowers, the outermost flower of each cymule subtended by a large leafy bract, nearly three inches long, scarlet above, red beneath, and with its stalk so united to the calyx as to seem a continuation of one of the teeth of the latter. Some parts of the cliff appeared from below in a perfect flame from the abundance of these gorgeous bracts to which the plant owes its Indian name, "Coruse-caa or Sun-leaf."

Another tree to flower, and to be much admired by visitors was *Spathelia simplex*, commonly known in the West Indies as "Mountain Pride." It is a palm like tree lofty and handsome, with large pinnate leaves and terminal panicles of reddish flowers.

DISTRIBUTION OF PLANTS.

Work in Nurseries and Distribution of Plants

There was a general awakening of interest in new lines of work by planters, and small proprietors, and much time of the staff of the Department was taken up in its efforts to meet the increased demand for planting material of all kinds.

In spite of Withertip the cultivation of the West Indian Lime is being profitably maintained in the Leeward and drier districts of the Island. Growers are extending their cultivations and the Department has decided again to raise seedlings of this lime for these districts which work was abandoned in 1923—24.

The distribution of plants although showing an increase over that of last year is not in itself sufficient indication of the considerable increase in propagating work, for considerable orders for budded grapefruit, oranges, avocado pear etc., have been booked for later delivery.

Considerable difficulty is being experienced in obtaining additional suitable land for nursery work, but this has been temporarily overcome by the removal of Sugar cane varieties from the nursery and the opening up of a new orange and grapefruit nursery on Morne Bruce.

PLANT DISTRIBUTION.

The number of plants sent out during the year is as follows:—

Limes	..	..	220
Budded Washington Naval Orange			20
Lemons	..	..	27
Sour citrus	..	..	248
Grafted Mangoes	..	..	239
Cacao	..	..	1,675
Coffee	..	..	7,090
Cashew	..	..	1,370
Vanilla	..	..	50
Nutmegs	..	..	591
Mangosteen	..	..	136
Tonka Beans	..	..	127
Coconuts	..	..	1,872
Papaw	..	..	129
Miscellaneous	..	..	274
Total			14,068

The following supply of miscellaneous seeds, seedlings and cuttings was also distributed:—

Vegetable seeds	..	..	1,880 packets
Sugar Cane Cuttings	..	..	1,000
Uba Cane Cuttings	..	..	6,150
Elephant Grass Cuttings	..	..	9,650
Shade Tree Cuttings	..	..	4,095
Lemon Grass plants	..	..	7,540
Guinea Grass plants	..	..	200
Black pepper cuttings	..	..	187
Miscellaneous cuttings	..	..	4,566
Tephrosia seed	..	..	9 lb.
Horse Beans	..	..	424 "

The propagation of new citrus varieties has been pushed on with in order to raise sufficient material for trial in the wetter districts devastated by withertip.

PLANT IMPORTATIONS.

The following list gives the varieties distributed during the year for observation purposes:—

Sour lime	..	..	18
Rangpur lime	..	..	14
Kusai	..	..	63
Citrus aurantifolia	..	..	56
Woglum lemon	..	..	18
Tahiti	..	..	28
Bears's Seedless	..	..	23
Limequat	..	..	12
Woglum Lime	..	..	6
Total			238

PLANT IMPORTATIONS.

The plants of the Chaulmoogra tree *Taraktogenos Kurzii* continue to do well.

There are now growing in these Gardens the following plants of this interesting group:—

Taraktogenos Kurzii five plants the largest specimen being 12 feet in height.

Hydnocarpus anthelminthica four plants, two of which have attained the height of two feet and the other two three feet.

Two plants of *Hydnocarpus castanea* being five and seven feet high respectively.

Oncoba echinata seventeen plants eight of which are six feet high and the remainder between three and five feet high.

All the specimens are flourishing and appear to be well suited to conditions in Dominica.

Efforts are being made to obtain seeds of *Hydnocarpus wightiana*, *H. alpinus*, and *Asteriastigna macrocarpa*.

Two plants of the "marang" (*Artocarpus odoratissimus*) which were presented to this Department by the United States Department of Agriculture in February 1925 were planted in the economic section of the Gardens. One of the plants unfortunately succumbed owing to the exceptionally dry weather. The other plant being in a damper situation is making rapid growth.

A fodder grass new to Dominica—*Tripsacum laxum* (Guatamala Grass) has been introduced for experimental purposes from the Agricultural Department Antigua.

THE LIME INDUSTRY

During the year under review the export figures showed a marked decrease on those of the previous year. This difference does not mean that the decrease is due to the fact of an increase in the ravags of Withrtip, but rather to the fact that there was a small carry over from the previous year.

The shipments of lime products during the calendar year do not strictly indicate a correct record of the crop for that season. For instance the high figure given as the exports for 1924 is undoubtedly due to the large carry over from the 1923 crop, the export figures for that year being noticeably low.

THE LIME INDUSTRY.

The lime crop for the past eight years is recorded below:—

1918	..	..	318,000	} Prior to appearance of Withertip.
1919	..	..	402,000	
1920	..	..	369,000	
1921	..	..	516,000	
1922	..	..	400,000	
1923	..	..	228,000	
1924	..	..	424,000	
1925	..	..	240,000	

The following table calculated at the usual basis* shows the disposal of the crop under the various heads:—

Product	Barrels of Fruit.	Approximate per-centage of Total crop.
Green Limes	20,218	8.76
Pickled Limes	536	.23
Raw Lime Juice	41,853	18.13
Concentrated Lime Juice	167,905	72.73
Lime Juice Cordial	348	.15

In comparison with last year's figures the proportion shipped as concentrated lime juice fell from 83.97% to 72.73% and that shipped as raw juice rose from 10.95% to 18.13%. Compared with the previous year there is a total decrease in value of £39,317.

The weather conditions were generally favourable throughout the year, there being an absence of high winds and torrential rains.

The condition of Estates badly affected by withertip and situated in wet districts, remains the same. Others more favourably situated, that is on the drier lands of the Leeward coast, continue to bear fairly well in spite of the disease.

The export of lime products during 1925 is as follows:—

Product	Quantity.	Value
Concentrated Lime Juice	111,937 gallons	£33,221
Raw Lime Juice	313,896 „	19,767
Lime Juice Cordial	1,741 „	196
Green Limes	20,218 Barrels	22,669
Pickled Limes	536 „	1,072
Essential Oil (distilled)	35,818 Lb.	11,565
Otto of limes (hand-pressed or ecuelled)	10,531 „	8,220
	Total	£96,710

* 50 gallons concentrated lime juice equal 75 barrels of lime fruits: 7½ gallons raw lime juice represents 1 barrel of lime fruits: one ton of citrate of lime represents 266 barrels lime fruits: one ton of citric acid is equivalent to 400 barrels of lime fruits.

Minor Industries

COCONUTS.

The established coconut plantations are being maintained in good order and a considerable area of new land has been planted up in the Windward districts of the Island.

Some planters whose lime cultivations have had to be practically abandoned through "Withertip" are now actively engaged in clearing their lime trees and planting coconuts.

The export of Copra, although small, is on the increase and Copra driers have now been erected on several estates, so there is every indication of this industry being seriously resumed.

The following table shows the export figures for Coconuts and Copra during the last five years.

	Nuts.	Copra.
1921	299,787	Nil
1922	214,289	4,990 lb.
1923	206,138	42,561 „
1924	154,049	46,173 „
1925	225,031	64,977 „

TOBACCO.

A considerable acreage having been planted in tobacco the Government obtained the services of Mr. E. J. Brooks, a Tobacco Expert of Jamaica for the purpose of advising growers on the curing of the crop and also its preparation for the overseas and local markets. Mr. Brooks arrived in Dominica on 1st June and was attached to this Department. Mr. Bruney, Travelling Agricultural Instructor was detailed as his assistant in order that he might acquire as much knowledge as possible about this work.

It was soon evident that as the cultivations were some distance apart that it would be necessary to establish a central curing depot if full advantage was to be taken of Mr. Brooks's services.

The Agricultural Superintendent thereupon called a meeting of gentlemen interested in the Tobacco industry on June 10th and pointed out the advisability of having a central curing station in or near Roseau where Mr. Brooks would superintend the curing, grading, and baling of Tobacco which in its uncured state could be sent to the Depot by the growers. He also pointed out the advisability of co-operation if this industry was to be assured of success and outlined the work performed by Co-operative Associations in Antigua. The outcome of the meeting was the establishment of a central curing depot in Roseau and the forming of a Tobacco Growers Co-operative Association.

The following extracts from the Committee's Report to the Annual General Meeting of the Association held on April 16th, 1926, clearly shows satisfactory progress made to that date. "The Committee beg to report that they have received altogether at the depot 18,298 lb. of leaf. Out of this country 1,043 lb of cured tobacco has been shipped to the English Market, consigned to Curtis, Campbell, and Co., but up to the present the result of the sale has not been received. This leaves a balance in hand, after deducting amount sold locally of 17,105 lb....."

MINOR INDUSTRIES.—VANILLA—GINGER, &C.

"After many experiments we are now in the position of having succeeded in making a "Black" tobacco for local sale which meets with general approval and as soon as the stocks of imported tobacco are exhausted we can supply any demand as ample stocks of this tobacco are available at the Depot."

With reference to making "Black" tobacco the Committee points out that the success of the experiments has been entirely due to Mr. Bruney of the Agricultural Department, his untiring efforts in this direction being deserving of the highest praise.

Mr. Brooks left Dominica on October 6th and Mr. Bruney will continue with the Association until other arrangements are made.
Vanilla.

Much attention is now being paid to the extension of this industry and planters and also the peasants generally are making considerable plantings.

One of the greatest difficulties that planters have to contend with in the growing of this crop is praedial larceny and it has been suggested that the fruits should be marked or branded, which marks the Government offers to register.

The seriousness of praedial larceny in affecting this industry is fully recognised by the Government and at a meeting of the Legislative Council held on the 15th of October, 1925 an Ordinance relating to Vanilla was passed.

The main points of this Ordinance are:—

1. That there will be a Close Season (dates to be proclaimed each year) during which no Vanilla is to be picked.
2. Immature Vanilla is not to be sold at any time.
3. That no one except the owner who must have with him his Sellers Licence Book, (or his agents or servants having a detailed order from him) shall transport Vanilla by road or sea.
4. Vanilla can only be delivered on sale or transferred at a Police Station before a Policeman or at a Government Depot before a Government Officer, and that identification marks shall be recorded in the books at the said stations or depots.
5. That no Vanilla shall be exported until certified as "Fit for export" by a Vanilla Examiner, whose certificate must be produced, together with the Seller's or Purchaser's Licence, to the Treasurer before shipment.

Officers of this Department have been appointed Vanilla Examiners under the above Ordinance.

GINGER.

The encouraging results obtained during 1924 continued with the favourable reports on samples of cured ginger which have been forwarded to the Imperial Institute, induced several planters to plant several acres of land in this crop. Good results were obtained in most cases and first rate curings of white Ginger were produced and shipped to England. A good quality of black Ginger was also shipped, but up to the present no account sales are to hand.

Ginger gives promise of affording a subsidiary staple crop, but, growers must realise how essential it is that the plant should be grown on good rich soil if a good marketable ginger is to be obtained. If grown on poor land the product is of little commercial value.

MINOR INDUSTRIES. COFFEE --NUTMEGS --FRUIT.

COFFEE.

There was a large demand for Coffee plants of the Robusta type.

A number of plants of the variety known as Excelsa have been raised in the Government nurseries and will be tried experimentally as soon as the plants are ready to plant out. This variety which is favourably spoken of, is one of the coffees of heavy leaf texture, a vigorous grower of handsome appearance, productive, and the crop quality is said to be good.

Plants of another variety known as San Ramon, have also been raised. This variety has a very good reputation in Porto Rico, and will be tried experimentally in Dominica.

NUTMEGS.

During the year high prices ruled for Nutmegs and Mace, this leading to a sudden demand on the Department for large numbers of young plants, which completely exhausted the available supply. The demand still continues and there is every prospect of the large number of seedlings now being raised meeting with a ready sale. The Department has for many years advocated the planting of Nutmegs in Dominica and it is a matter of regret that this advice was not heeded.

FRUIT INDUSTRY.

The present position regarding the fruit industry in Dominica cannot be regarded as being at all satisfactory. From advices received it is evident that a large quantity of fruit unfit for export trade is being constantly shipped to overseas markets and in containers absolutely unsuited to the trade. This matter is now receiving the attention of the Agricultural and Commercial Society. Trial shipments of fruit were made by the Department to Bermuda and Canada with highly satisfactory results. Subsequent orders received as a result of these shipments were placed with local growers, every assistance being given to them by the Department in advising on the selection, grading and packing, etc., of their fruit for these shipments.

It will be noticed from the table given below that there is little difference in the quantities shipped to that of the previous year, but from advance orders received for fruit trees it is evident that new areas will be planted up.

EXPORT OF FRUIT OTHER THAN LIMES.

Fruits	1924.	1925.
Mangoes	7,968 crates	7,925 crates
Oranges	1,433 barrels	1,446 barrels
Grapefruit	327 crates	679 crates
Avocado Pears	1,351 „	1,326 „
Bananas	8,390 bunches	13,834 bunches

PRINCIPAL EXPORTS AND THEIR COMMERCIAL VALUE.

CHIEF EXPORTS.

Table of Agricultural Exports for the Triennial period 1923 to 1925.

		1923	1924.	1925.	
<i>Lime Products:</i>					
Concentrated Juice	Gallons	79,272	237,369	111,937	
Raw Juice	"	428,895	348,324	313,896	
Lime juice Cordial	"	2,477	21,944	1,741	
Distilled oil	lb.	43,482	37,244	35,818	
Essenced oil of limes	"	13,762	11,795	10,531	
Citrate of lime	"	181,629	7,789	—	
Green Limes	barrels	20,748	19,231	20,218	
Pickled limes	"	180	293	536	
Citric Acid	lb.	51,833	—	—	
<i>Cocoa Products:</i>					
Cocoa	lb.	634,908	782,281	785,669	
Prepared cocoa	"	454	1,052	226	
<i>Coconut Products:</i>					
Coconuts		206,138	154,049	225,031	
Copra	lb.	42,561	46,173	64,977	
<i>Coffee Products:</i>					
Coffee	lb.	350	748	18,279	
<i>Sugar Products:</i>					
Rum	Gallons	—	145	—	
Syrup	"	—	112	16	
<i>Spices:</i>					
Vanilla	lb.	668	2,168	2,112	
Nutmeg	"	—	2,938	1,605	
Ginger	"	3,760	1,000	2,100	
<i>Honey Products:</i>					
Honey	lb.	4,225	4,738	7,253	
Bees Wax	"	166	45	460	
<i>Various Products:</i>					
Bananas	bunches	1,592	8,390	13,834	
Oranges	barrels	1,013	1,433	1,446	
Mangoes	crates	3,782	7,968	7,925	
Grapefruit	"	381	327	679	
Pears	"	1,076	1,351	1,326	
Miscellaneous fruits		£50 worth	£48 worth	88	crates
Bay oil	lb.	9,132	7,406	14,283	
Orange oil	"	1,522	1,319	2,278	
Kola nuts		£10 worth	£5 worth	—	
Cassia fistula	lb.	2,664	582	—	
Tamarinds	barrels	16	117	192	
Vegetables		—	£87 worth	£166 worth	
Farine	lb.	784	3,060	—	
Hides and Skins		528	847	893	
Leather unmanufactured	"	666	547	1,053	
Plants, bulbs and seeds		£10 worth	£18 worth	£6 worth	
Fruits, Jams & Jellies	"	389	210	160	
Turtle Shells	"	338	413	423	
Baskets		£18 worth	£28 worth	£12 worth	
<i>Forest Products:</i>					
Hardwood	feet	36,990	100,357	80,287	
Firewood	cords	560	631	1,145	
Canoe Shells		10	27	71	
Hoops	bundles	—	50	—	
Shingles		10,400	41,125	13,600	
Charcoal	lb.	5,474	16,734	21,290	
Ships & Boats		£40 worth	—	£508 worth	
Total values		£113,971	£171,257	£125,596	

Summary of Legislation affecting Crops.

The first step in the direction of plant protection was taken in 1898 when Act No. 3 was passed to provide against the importation of articles likely to introduce diseases among plants. Under the authority of this act, a Proclamation dated August 27, 1898, prohibited the importation from Ceylon of plants, seeds, berries, earth and soil. This Act was suspended by Law No. 9 of 1904, in which provision is made for the fumigation and disinfection of imported plants, cuttings, buds, grafts, bulbs, roots and seeds, and their packages; also their fruit and vegetables intended for propagation, and not for consumption as food.

Under Law No. 6 of 1907 power is conferred to prohibit by proclamation the importation of plants, cuttings, bulbs, roots, seeds, or berries, or any earth or soil, or any articles packed therein, or any packages, or other articles or things likely to be the means of introducing any plant disease.

A Proclamation dated February 5, 1909 under No. 6 of 1907, prohibits the importation into Dominica of all plants from Dutch Guiana, which are likely to be a means of introducing disease from that country.

A Proclamation dated October 26, 1910 prohibits the importation of banana plants and suckers from all countries of Central or South America, and from the island of Trinidad, also of coconuts in husk, and all growing plants of coconuts, from Cuba, Jamaica, Trinidad, and all countries of Central and South America.

A Proclamation dated October 9, 1916, restricts under certain conditions, the entry of rooted plants of all kinds from the United States of America, Cuba, Jamaica, Haiti, San Domingo, and Porto Rico.

A Proclamation dated October 26, 1917, prohibits the importation of seed cotton or cotton seed from all countries or places outside the Colony of the Leeward Islands, save and except from some other Presidency of the Colony, or from the Colony of Trinidad and Tobago, and its dependencies or from the Colonies of Grenada, St. Vincent, and St. Lucia, provided, however, that small quantities of cotton seed for experimental purposes may be imported into the Presidency of Dominica, on the written permission of the Superintendent of Agriculture on such terms and conditions as he may prescribe.

A Proclamation dated December 21, 1920, prohibits the importation of sugar cane from any other country into this Presidency, for the time being.

A Proclamation dated February 21, 1921, prohibits the importation of Johnson Grass from any other country into this Presidency. (*Holcus halepensis*).

A Proclamation dated January 28, 1923, prohibits the importation of Banana plants, (suckers), from all countries except other Leeward Islands, Grenada, St. Vincent, and Barbados.

A Proclamation dated December 24, 1923, prohibits the importation of coconuts and coconut plants from any other country into this Presidency until further orders.

A Proclamation dated May 4, 1925, prohibits the importation of Banana plants (suckers) into this Presidency from all countries except other Leeward Islands, St. Vincent, and Barbados without the written permission of the Governor.

A Proclamation dated July 27, 1925 prohibits the importation of citrus plants from all countries except Windward and Leeward Islands, Trinidad and Tobago, and Barbados. It is however, allowed that the Curator or Agricultural Officer shall have the power to import for scientific purposes anything

REPORT ON LIME EXPERIMENT STATION.

thus prohibited, on his making a report of such importation for the information of the Governor.

An Ordinance, No. 23 of 1925 regulates the examination, curing and exportation of Vanilla and also prohibits certain dealings with the same.

An Ordinance dated September 18, 1925, regulates the examination, curing and exportation of Tobacco.

With regard to the export of plants, it is only necessary to state that such cannot be admitted into the United States of America unless accompanied by a certificate showing that they have been inspected by a duly authorized official, and found free from injurious plant diseases or insect pests.

PLANT FUMIGATION.

All planting material imported into the Presidency is immediately handed to the Department for fumigation or dealt with as considered necessary to prevent the introduction of disease.

Report on the Lime Experiment Station, Dominica.

This Station was started in April 1913, and the first planting of limes was in July of the same year. A statement showing the expenditure and the receipts during the thirteen year period is given below:—

	Expenditure			Receipts.		
	£	s.	d.	£	s.	d.
1913—14	50	0	0	17	9	7
1914—15	70	0	0	61	1	5
1915—16	120	0	0	86	9	10
1916—17	175	0	0	121	2	11
1917—18	175	0	0	180	12	2
1918—19	200	0	0	233	12	8
1919—20	250	0	0	625	6	7
1920—21	320	0	0	741	8	2
1921—22	400	0	0	456	8	3
1922—23	350	0	0	423	1	2
1923—24	350	0	0	515	3	5
1924—25	332	10	8	662	3	9½
1925—26	341	3	4	671	10	10
Cost of manures to date	382	0	0			
Cost of drainage (from Special Service Grant)	48	3	0			
Head Labourer's house	60	0	0			
Shed for housing mill, etc.,	100	0	0			
	£3,723	17	0	4,795	10	9½

Supervision, always a considerable charge, has cost nothing in this instance, the work being done by the Agricultural officers. A fair amount of assistance has also been given by the two or three agricultural pupils who have been under training during recent years. These pupils were from time to time engaged in sowing green dressings, applying manures, pruning trees and other work of a light character.

It should be clearly understood that the figures of expenditure given above not only maintain the present bearing area of limes, which includes the gather-

REPORT ON LIME EXPERIMENT STATION.

ing, but also covers the cost of upkeep of about five acres of young lime cultivation, eight acres of young coconuts, and a further area of three acres consisting of grapefruit, camphor, avocado pears etc.

During the thirteen years of its ~~experience~~^{existence} the Experiment Station, so far as the disposal of the crop is concerned, has been in the position of a small grower; that is the ripe and green limes have had to be sold in the open market at the current ruling prices. For the purpose of record a table has been prepared which shows the local market rates per barrel of fruit since 1914—15:

RIPE LIMES.

Year.	Barrels of fruit.	Amount received.			Rate per barrel.		
		£	s.	d.	£	s.	d.
1914—15	222	61	1	5		5	6
1915—16	315	86	9	10		5	6
1916—17	541	121	1	1		4	5½
1917—18	649	180	12	2		5	6¾
1918—19	1,070	221	2	8		4	1½
1919—20	1,589	498	1	6		6	5½
1920—21	2,571	688	17	4		5	4¼
1921—22	2,485	456	8	3		3	8
1922—23	2,916	423	1	2		2	10¾
1923—24	2,502	453	15	5		3	7½
1924—25	2,684	629	11	9½		4	3¾
1925—26	2,792½	630	7	6		4	6

GREEN LIMES.

1918—19	10	12	10	0	1	5	0
1919—20	191	127	5	1		13	3¾
1920—21	55½	52	10	10		18	11
1921—22	—	—	—	—		—	—
1922—23	—	—	—	—		—	—
1923—24	66	61	8	0		18	7
1924—25	40	32	12	0		16	3½
1925—26	42	41	3	4		19	7½

The Experiment Station crop was 2,792 barrels of ripe limes and 42 barrels of green limes, all of which were sold in the local market and realised the sum of £671. 10. 10. The total crop for the year was 2,834 barrels of fruit a slight increase on that of the previous year.

MANURIAL EXPERIMENTS WITH LIMES.

The main manurial experiments now carried on consist of five plots three times repeated, two series with young limes, and one series with old limes. They are as follows:—

- A. Complete manure of nitrogen, phosphates, and potash.
- B. Control. No manure.
- C. Mulch of grass, 5 tons per acre.
- D. Nitrogen and phosphates.
- E. Nitrogen and potash.

In each case the nitrogen was originally applied in the form of Swift's manure 8 per cent. ammonia at the rate of 4 cwt. per acre, but for a period of three years this manure could not be obtained, and the equivalent in the form of Cotton Seed meal was applied instead. During the past three years dried blood, 14 per cent. ammonia has been used.

The mulch applied is mainly in the form of lemon grass, supplemented by leaves and young shoots of *Gliricidia maculata*. Both forms of mulch are especially grown on what would otherwise be waste grounds in the vicinity of the plots. This system of utilising odd corners, steep hill-sides, and the banks of streams for growing material for application to cultivated areas is strongly recommended in Dominica.

The phosphatic requirements of the plots are furnished in the form of basic slag, applied at the rate of 4 cwt. per acre, and the potash by sulphate of potash at the rate of $1\frac{1}{2}$ cwt. per acre. During 1920—21 neither of these manures could be obtained, and the falling away of the crop during 1921—22 is in some measure due to the lack of these fertilizers. During recent years sulphate of potash was again available, and as basic slag could not be got, 16 per cent. acid phosphate was used in its place.

LIMES.—RESULT OF MANURIAL EXPERIMENTS.

The yields of these plots in barrels of fruit, during the period 1917—18 and 1925—26 are given below:—

NINE YEARS' RESULT OF MANURIAL EXPERIMENTS WITH LIMES.

ORIGINAL SERIES.

Trees planted July, 1913.

Year.	Size of plots.	A.		B.		C.		D.		E.	
		Complete Manure.		Control.		Mulch.		Nitrogen and phosphates.		Nitrogen and potash.	
		per plot.	per acre.	per plot.	per acre.	per plot.	per acre.	per plot.	per acre.	per plot.	per acre.
1917-18	1 1/4 acre	15 3/4	63	14	56	23 3/4	95	23 3/4	95	7 3/4	31
1918-19	"	60	240	45 3/4	183	71 3/4	287	58 1/2	234	34 3/4	139
1919-20	"	85	340	89 1/2	358	99 1/2	398	88 1/2	354	60 1/2	242
*1920-21	"	118 3/4	475	109 1/4	437	130 1/2	522	117 1/2	470	112	448
1921-22	"	95	380	85 3/4	343	99	396	85 3/4	343	86	344
1922-23	"	88	352	68 1/2	274	95 1/2	382	81 1/2	326	80 1/2	322
†1923-24	"	56 1/4	225	47 1/4	189	69 3/4	279	56 1/2	226	63	252
1924-25	"	51	204	38	152	53 1/4	213	37	148	48 3/4	195
1925-26	"	50 1/4	201	31 1/2	126	50 1/4	201	49 1/4	197	42 3/4	171

DUPLICATE SERIES.

Trees planted July, 1913.

Year.	Size of plots.	A.		B.		C.		D.		E.	
		Complete Manure.		Control.		Mulch.		Nitrogen and phosphates.		Nitrogen and potash.	
		per plot.	per acre.	per plot.	per acre.	per plot.	per acre.	per plot.	per acre.	per plot.	per acre.
1917-18	1 1/4 acre	6 3/4	27	10 1/4	41	18	72	6 3/4	27	10 3/4	43
1918-18	"	34 3/4	139	22 1/2	90	42 1/4	169	80	120	38 1/2	154
1919-20	"	57 3/4	231	38	152	69 3/4	279	60 1/2	242	72 1/2	290
*1920-21	"	117	468	81 1/2	326	115 1/2	462	105 3/4	423	115 3/4	463
1921-22	"	79	316	52 3/4	209	85 1/2	342	81	324	94	376
1922-23	"	77	308	45	180	80	320	82	328	97	388
†1923-24	"	55 1/4	221	35 3/4	143	60 1/2	242	54	216	70 1/2	282
1924-25	"	47	188	29 1/4	117	46	184	40 1/2	162	56 1/2	226
1925-26	"	37 3/4	151	21	84	47 1/2	190	50 1/4	201	55 1/2	222

* No phosphates or potash applied that year.

† First complete year under "Withertip" conditions.

LIMES.—RESULT OF MANURIAL EXPERIMENTS.

TRIPPLICATE SERIES.

Old Trees planted 1893.

Year.	Size of plots.	A.		B.		C.		D.		E.	
		Complete manure.		Control.		Mulch		Nitrogen and phosphates.		Nitrogen and potash	
		per plot	per acre	per plot	per acre	per plot	per acre	per plot	per acre	per plot	per acre
1917-18	$\frac{1}{4}$ acre	45	180	$29\frac{3}{4}$	119	$25\frac{1}{2}$	102	$27\frac{1}{2}$	110	$22\frac{3}{4}$	91
1918-19	"	70	280	$32\frac{1}{2}$	130	23	92	$52\frac{1}{2}$	210	$34\frac{1}{2}$	138
1919-20	"	$89\frac{3}{4}$	359	$48\frac{1}{2}$	194	32	128	$67\frac{1}{4}$	269	50	200
*1920-21	"	$85\frac{1}{4}$	341	$52\frac{1}{2}$	210	$43\frac{3}{4}$	175	97	388	$64\frac{3}{4}$	259
1921-22	"	71	296	$42\frac{1}{2}$	170	40	160	79	316	$73\frac{3}{4}$	295
1922-23	"	69	276	34	136	37	148	86	344	70	280
†1923-24	"	$54\frac{1}{2}$	218	$26\frac{1}{2}$	106	$45\frac{1}{4}$	181	$61\frac{1}{4}$	245	$56\frac{1}{4}$	225
1924-25	"	$35\frac{1}{4}$	141	21	84	35	140	$48\frac{1}{2}$	191	43	182
1925-26	"	$40\frac{1}{4}$	161	$24\frac{1}{2}$	98	36	144	$38\frac{3}{4}$	155	43	182

The ten plots of young limes, which cover an area of $2\frac{1}{2}$ acres were planted in July 1913, and are therefore, at the end of March 1926 twelve years and nine months old from the time of being placed out in the fields. The crop returns during this period are as follows:—

1917—18	5th year	..	$137\frac{1}{2}$	barrels	or	55 barrels	per acre
1918—19	6th	"	$438\frac{3}{4}$	"	"	175	" " "
1919—20	7th	"	$721\frac{1}{2}$	"	"	288	" " "
*1920—21	8th	"	1,124	"	"	450	" " "
1921—22	9th	"	$844\frac{1}{2}$	"	"	338	" " "
1922—23	10th	"	805	"	"	322	" " "
†1923—24	11th	"	$568\frac{3}{4}$	"	"	227	" " "
1924—25	12th	"	$447\frac{1}{4}$	"	"	179	" " "
1925—26	13th	"	436	"	"	174	" " "

A better idea of the effects of the various manures and cultural measures carried on, may be gained from the table below, in which the plots, each receiving identical treatment in the three series of experiments, are grouped together. This table shows at a glance the actual yield per three plots of a kind grouped together, the calculated yield per acre, and the increase or decrease per acre per annum compared with the previous year.

* No phosphates or potash applied that year.

† First complete year under "Withertip" conditions.

LIMES. - COMPARATIVE ANALYSIS OF YIELDS.

3 COMPLETE MANURE PLOTS. ($\frac{1}{4}$ ACRE EACH).

Year	Area.	Yield in Barrels Per $\frac{3}{4}$ Acre.	Calculated yield in barrels per acre.	Increase or decrease per Acre compared with previous year.
1917-18	$\frac{3}{4}$ Acre	67 $\frac{1}{2}$	90	
1918-19	"	164 $\frac{3}{4}$	219 $\frac{2}{3}$	+ 129 $\frac{2}{3}$
1919-20	"	232 $\frac{1}{2}$	310	+ 90 $\frac{1}{3}$
1920-21	"	321	428	+ 118
1921-22	"	248	330 $\frac{2}{3}$	- 97 $\frac{1}{2}$
1922-23	"	234	312	- 18 $\frac{2}{3}$
†1923-24	"	166 $\frac{1}{2}$	222	- 90
1924-25	"	133 $\frac{1}{4}$	177 $\frac{7}{9}$	- 44 $\frac{5}{9}$
1925-26	"	128 $\frac{1}{4}$	171	- 62 $\frac{2}{3}$
		1,695 $\frac{3}{4}$ Total yield for 9 yrs.		

3 CONTROL PLOTS ($\frac{1}{4}$ ACRE EACH).

Year	Area.	Yield in Barrels Per $\frac{3}{4}$ Acre.	Calculated yield in barrels per acre.	Increase or decrease per Acre compared with previous year.
1917-18	$\frac{1}{4}$ Acre	54	72	+ 62 $\frac{1}{3}$
1918-19	"	100 $\frac{3}{4}$	134 $\frac{1}{3}$	+ 100 $\frac{1}{3}$
1919-20	"	176	234 $\frac{2}{3}$	+ 89 $\frac{2}{3}$
1920-21	"	243 $\frac{1}{4}$	324 $\frac{1}{3}$	- 84
1921-22	"	180 $\frac{1}{4}$	240 $\frac{1}{3}$	- 44 $\frac{1}{3}$
1922-23	"	147	196	- 50
†1923-24	"	109 $\frac{1}{2}$	146	- 28
1924-25	"	88 $\frac{1}{2}$	118	- 15 $\frac{1}{3}$
1925-26	"	77	102 $\frac{2}{3}$	
		1,176 $\frac{1}{4}$ Total yield for 9 yrs.		

* No phosphates or potash applied that year.

† First complete year under "Withertip" conditions.

LIMES.—COMPARATIVE ANALYSIS OF YIELDS.

3 MULCH PLOTS. ($\frac{1}{4}$ ACRE EACH).

Year	Area.	Yield in Barrels Per $\frac{3}{4}$ Acre.	Calculated yield in barrels per acre.	Increase or decrease per Acre compared with previous year.
1917—18	$\frac{1}{4}$ Acre	67 $\frac{1}{4}$	89 $\frac{2}{3}$	+ 94 $\frac{1}{3}$
1918—19	"	138	184	+ 84 $\frac{1}{3}$
1919—20	"	201 $\frac{1}{4}$	268 $\frac{1}{3}$	+ 117 $\frac{2}{3}$
*1920—21	"	289 $\frac{3}{4}$	386	+ 86 $\frac{2}{3}$
1921—22	"	224 $\frac{1}{2}$	299 $\frac{1}{3}$	— 16 $\frac{2}{3}$
1922—23	"	212	282 $\frac{2}{3}$	— 48 $\frac{1}{3}$
†1923—24	"	175 $\frac{3}{4}$	234 $\frac{1}{3}$	— 54
1924—25	"	135	180	— 1 $\frac{2}{3}$
1925—26	"	133 $\frac{3}{4}$	178 $\frac{1}{3}$	
1,577 $\frac{1}{4}$ Total yield for 9 yrs.				

3 NITROGEN AND PHOSPHATE PLOTS. ($\frac{1}{4}$ ACRE EACH).

Area.	Year	Yield in Barrels Per $\frac{3}{4}$ Acre.	Calculated yield in barrels per acre.	Increase or decrease per Acre compared with previous year.
1917—18	$\frac{3}{4}$ Acre	64 $\frac{3}{4}$	86 $\frac{1}{3}$	+ 101 $\frac{2}{3}$
1918—19	"	141	188	+ 100 $\frac{1}{3}$
1919—20	"	216 $\frac{1}{4}$	288 $\frac{1}{3}$	+ 138 $\frac{2}{3}$
*1920—21	"	320 $\frac{1}{4}$	427	— 106 $\frac{1}{3}$
1921—22	"	240 $\frac{1}{2}$	320 $\frac{2}{3}$	+ 12 $\frac{2}{3}$
1922—23	"	250	333 $\frac{1}{3}$	— 104 $\frac{1}{3}$
†1923—24	"	171 $\frac{3}{4}$	299	— 61
1924—25	"	126	168	+ 16 $\frac{1}{3}$
1925—26	"	138 $\frac{1}{4}$	184 $\frac{1}{3}$	
1,668 $\frac{3}{4}$ Total yield for 9 yrs.				

* No phosphates or potash applied that year.

† First complete year under "Withertip" conditions.

LIMES. - COMPARATIVE ANALYSIS OF YIELDS.

3 NITROGEN AND POTASH PLOTS. ($\frac{1}{4}$ ACRE EACH).

Year	Area.	Yield in Barrels Per $\frac{3}{4}$ Acre.	Calculated yield in barrels per acre.	Increase or decrease per Acre compared with previous year.
1917—18	$\frac{3}{4}$ Acre	411 $\frac{1}{4}$	55	
1918—19	"	107 $\frac{3}{4}$	134 $\frac{2}{3}$	+ 88 $\frac{2}{3}$
1919—20	"	183	244	+ 100 $\frac{1}{3}$
*1920—21	"	292 $\frac{1}{2}$	390	+ 146
1921—22	"	253 $\frac{3}{4}$	338 $\frac{1}{3}$	— 51 $\frac{2}{3}$
1922—23	"	257	342 $\frac{2}{3}$	+ 3 $\frac{2}{3}$
†1923—24	"	190	253 $\frac{1}{4}$	— 89 $\frac{1}{2}$
1924—25	"	148	197	— 56
1925—26	"	141 $\frac{1}{4}$	188 $\frac{1}{3}$	— 8 $\frac{2}{3}$
		1,614 $\frac{1}{2}$ Total yield for 9 yrs.		

The falling off in yields on the above mentioned plots was entirely due to the presence of the Withertip disease of limes which was first noticed in the Experiment Station in July, 1922.

The above records are, however, valuable as showing what could be done under average conditions on estates during the years of working, prior to the advent of withertip, if the cultural and manurial requirements of the trees are attended to. Had the whole area of 2 $\frac{1}{2}$ acres received a complete concentrated manure, the returns would have been bigger than those shown in the table.

Judging by Dominica standards, all the plots, including those receiving no manure have done well. In the latter instance the influence of good cultural measures, apart from the application of manures must be evident to all who study the table of crop returns.

The mulched plots, although not giving the highest return, are of special interest to lime growers. As is well known this material is without the forcing effect of concentrated fertilizers, but it is cumulative in its effect. It is practically certain that the standard of health of the lime tree is higher in the mulched than in any of the plots receiving concentrated manures only. This material which is so abundant in the island, should be the chief manure used by cultivators.

OTHER MANURIAL EXPERIMENT PLOTS.

Both seedling and spineless limes budded on sour orange stocks, and ordinary seedlings have been under experiment since 1914, and occupy one acre of land.

The acre is divided up into $\frac{1}{4}$ acre plots: two plots of common limes budded on sour orange stocks: one plot of spineless limes on the same kinds of stocks: and one plot of ordinary seedling limes for comparison.

* No phosphates or potash applied that year.

† First complete year under "Withertip" conditions.

LIMES.—RESULT OF EXPERIMENTS.

During 1917—18 and 1918—19 the trees in each plot have received a small dressing of organic nitrogen at the rate of 4 cwt. per acre. During the first three years of their existence, No. 1 budded plot (see table below), was grown with Tephrosia as a green dressing, whilst No. 2 budded plot was grown in the usual way with weeds and grass, which was occasionally weeded. The spineless had green dressings of horse beans, and the seedling limes were clean weeded. Early in 1919—20 each plot received a complete manure of nitrogen, phosphates and potash. It is intended to maintain this series as complete manure plots. The crop yields off the four plots since fruiting commenced are as follows:—

NINE YEARS RESULTS OF EXPERIMENTS CONDUCTED WITH SPINELESS AND COMMON LIMES, BUDDED ON SOUR ORANGE STOCKS, AND WITH COMMON SEEDLING LIMES.

PLANTED JULY 1914.

SPINELESS LIMES BUDDED ON SOUR ORANGE STOCKS.

Year	Size of plot.	Actual yield in barrels per plot.	Calculated yield in barrels per acre.
1917—18	$\frac{1}{4}$ Acre	$6\frac{1}{2}$	26
1918—19	"	$18\frac{1}{4}$	73
1919—20	"	34	136
1920—21	"	46	184
1921—22	"	$45\frac{1}{2}$	182
1922—23	"	62	248
1923—24	"	26	104
1924—25	"	$24\frac{2}{3}$	$98\frac{2}{3}$
1925—26	"	$29\frac{1}{4}$	117

COMMON LIMES BUDDED ON SOUR ORANGE STOCKS. (NO. 1).

Year	Size of plot.	Actual yield in barrels per plot.	Calculated yield in barrels per acre.
1917—18	$\frac{1}{4}$ Acre	8	32
1918—19	"	$34\frac{3}{4}$	139
1919—20	"	$39\frac{3}{4}$	159
1920—21	"	$98\frac{1}{2}$	394
1921—22	"	$91\frac{3}{4}$	367
1922—23	"	132	528
1923—24	"	59	236
1924—25	"	$59\frac{2}{3}$	$238\frac{2}{3}$
1925—26	"	$68\frac{1}{4}$	273

* No phosphates or potash applied that year.

LIMES.—RESULTS OF EXPERIMENTS.

COMMON LIMES BUDDED ON SOUR ORANGE STOCKS. (NO. 2.)

Year	Size of plot.	Actual yield in barrels per plot.	Calculated yield in barrels per acre.
1917—18	¼ Acre	6	24
1918—19	"	13¾	55
1919—20	"	31¼	125
*1920—21	"	86	344
1921—22	"	73¾	295
1922—23	"	121	484
†1923—24	"	65¼	261
1924—25	"	67¼	269
1925—26	"	76	304

COMMON SEEDLING LIMES.

Year	Size of plot.	Actual yield in barrels per plot.	Calculated yield in barrels per acre.
1917—18	¼ Acre	Nil	Nil
1918—19	"	16¾	67
1919—20	"	22¾	91
*1920—21	"	61	244
1921—22	"	58	232
1922—23	"	64½	258
†1923—24	"	55¾	223
1924—25	"	50½	201
1925—26	"	42¾	169

The returns from the four plots (or 1 acre), since bearing commenced are as follows:—

1917—18	4th year	..	..	20½ barrels of limes
1918—19	5th "	..	..	83½ " "
1919—20	6th "	..	..	127¾ " "
1920—21	7th "	..	..	291½ " "
1921—22	8th "	..	..	269 " "
1922—23	9th "	..	..	379½ " "
*1923—24	10th "	..	..	206 " "
1924—25	11th "	..	..	200¾ " "
1925—26	12th "	..	..	216¼ " "

* No phosphates or potash applied that year.

† First complete year under "Withertip" conditions.

LIMES.—MANURIAL EXPERIMENTS.

In this particular experiment the budded plants have again done better than the seedling limes, but whether the lead will be maintained is a matter which future work will be able to determine.

RECENTLY STARTED MANURIAL EXPERIMENT PLOTS.

Three new series, each consisting of three plots, were started early in 1921. The treatment given in the first series is repeated three times. The plots are numbered 16 to 24. The treatment is as follows:—

The treatment is as follows:—

SERIES I.	Plot 16.	Ready mixed complete fertilizer, (8 per cent. nitrogen 10 per cent. phosphates and 4 per cent. potash), at the rate of 500 lb. per acre (with mulch—2½ tons per acre).
	Plot 17.	Control. (No fertilizer or mulch).
	Plot 18.	Ready mixed complete fertilizer, (8 per cent. nitrogen, 10 per cent. phosphates, 4 per cent. potash) at the rate of 1,000 lb. per acre (with mulch—2½ tons per acre.)

The addition of nine plots brings the number of experiment plots now being conducted at the Station, up to thirty. The twenty-one plots running before the new experiments were started involved no less than 1,809 separate measurements and records, an average of eighty-six pickings per plot. With the addition of three new series this work connected with measuring and recording will be greatly increased involving as it will close on 2,600 measurements each year.

The following tables show the returns for the four years since the commencement of the experiments:—the yields being expressed in barrels.

SERIES I.

Year	A (16) Complete Manure (500lb mixed Fertiliser per acre.)		B (17) Control. (No Manure.)		C (18) Complete Manure (1,000lb mixed Fertiliser per acre.	
	Per plot	Per acre	Per plot.	Per acre.	Per plot	Per acre.
1921-22	17	60½	10	30	20	68
1922-23	46	164	28½	85	65½	225½
1923-24	50	197½	36½	110½	64½	223
1924-25	55½	199	46½	141½	66½	228
1925-26	51	182½	32½	99	56	193

LIMES.—MANURIAL EXPERIMENTS

SERIES II.

Year.	D		E		F	
	(19)		(20)		(21)	
	Complete Manure		Control		Complete Manure	
	500 lb. Mixed Fertilizer per acre.		(No Manure)		(1,000 lb. Mixed Fertilizer per acre).	
	per plot	per acre.	per plot	per acre	per plot	per plot
1921—22	6½	23	8¾	22	3½	10½
1922—23	18¼	65	31¼	80	42¼	128
1923—24	32	114	54	138½	62¾	190
1924—25	51½	184	57¾	148	66	200
1925—26	69½	248	44	112¾	69½	210¾

SERIES III.

Year	G		H		I	
	(22)		(23)		(24)	
	Complete Manure		Control		Complete Manure	
	(500 lb. Mixed Fertilizer per acre)		(No Manure)		(1,000 lb Mixed Fertilizer per acre)	
	per plot	per acre	per plot	per acre	per plot	per acre
*1921—22	36½	101½	31	91	45¾	147½
1922—23	23½	65	21¾	64	22¾	73
1923—24	22¾	63	20¾	61	22¾	73
1924—25	29¼	81	20½	60	25	80½
1925—26	35	97½	21	61¾	32	103

The areas of all the above plots are slightly over $\frac{1}{4}$ of an acre each, therefore the value in barrels per acre has been given to the nearest fraction.

It will be noticed that Series I and II compare favourably with each other. The returns from Series III are disappointing, even in plot 24, which receives 1,000 lbs. of mixed manure, the yield is very much lower than the control plots in series I and II.

* Higher returns due to some seedling limes which had not been removed from amongst the budded plants..

OBSERVATIONS ON LIME EXPERIMENT PLOTS.

GENERAL OBSERVATIONS.

There was again an increase in yield of fruit from the Lime plots in the Experiment Station this no doubt being largely due to very favourable weather, experienced throughout the year, and to a certain extent to new cultivation coming into bearing.

During the early stages of the second flowering several wet days were experienced, during which time, Withertip was very evident and a considerable percentage of flowers destroyed.

The disease was most apparent on trees situated at the Northern end of the Station and on those which are more or less exposed to damp valley breezes.

The plots and cultivations were kept in good order throughout the year, and judging by the large number of young fruit already set, the prospects for next year are most promising.

CITRUS VARIETIES ON TRIAL.

The plants in the new lime experiment plot situated on Morne Bruce, continue to make satisfactory progress with the exception perhaps of the Sour Lime and Eustis Limequat which varieties do not appear happy under the existing conditions.

The following varieties have already been planted: Tahiti, Bears's seedless, Kusai, Sour Lime, Citrus Mitis, Rangpur, Woglum Lemon, Eustis Limequat, Woglum Lime and Citrus aurantifolia. The two latter varieties being added to the collection during the year.

So far no sign of Withertip has been observed on any of these varieties.

A large number of plants have been raised and distributed to the wetter districts of the Island for observation purposes (See Plant Distribution Table).

One or two plants of Eustis Limequat, Woglum Lemon and Rangpur Lime fruited during the year. The fruits were analysed by the Government Chemist and for results of tests please see table in his report which is attached.

It is too early to report or issue recommendations concerning the varieties under trial although judging by the progress made by the plants it is hoped that more will be in a fruiting stage next year when a fuller report will be submitted.

CACAO EXPERIMENTS.

The new series of manurial experiments with cacao, consisting of ten plots are being carried on and the crop returns for the first four years are now given below. In these experiments the ten plots fall naturally into four sections as regards soil and situation, therefore the plots within the various groups are comparable with each other. The first seven plots are on level land; the remaining three are situated on a hillside.

MANURIAL EXPERIMENTS WITH CACAO.

The following table shows the area of each plot, treatment per plot, and estimate per acre.

Plot No.	Area, Acres	Treatment per plot.	Treatment per acre.
1.	0.40	261 lb. Mixed fertilizer 8—10—4 Without mulch	900 lb. Mixed fertilizer 8—10—4
2.	0.35	162 lb. Nitrapo, 200 lb. Acid phosphate.	450 lb. Nitrapo, 555½ Acid phosphate.
3.	0.35	126 lb. Nitrapo, 157 lb. Acid phosphate, 1,568 lb. Mulch.	450 lb. Nitrapo, 560¾ Acid phosphate, 2½ tons Mulch.
4.	0.37	4,144 lb. Mulch.	5 tons Mulch.
5.	0.40	261 lb. Mixed fertilizer 8—10—4 3,248 lb. Mulch.	900 lb. Mixed fertilizer 8—10—4 5 tons Mulch.
6.	0.25	75 lb. Nitrapo, 118 lb. Acid phosphate, 1,400 lb. Mulch.	300 lb. Nitrapo, 472 lb. Acid phosphate, 2½ tons Mulch.
7.	0.25	150 lb. Cotton seed meal, 118 lb. Acid phosphate, 25 lb. Potash. 248½ lb. Mixed fer- tilizer. 8—10—4.	600 lb. Cotton seed meal, 472 lb. Acid phosphate, 100 lb. Potash. 600 lb. Mixed fertilizer 8—10—4
8.	0.414	223 lb. Mixed fertilizer 8—10—4	400 lb. Mixed fertilizer 8—10—4
9.	0.373	4,177 lb. Mulch.	5 tons Mulch.
10.	0.40	160 lb. Mixed fertilizer 8—10—4 200 lb. Lime, 1 ton Mulch.	400 lb. Mixed fertilizer 8—10—4 500 lb. Lime, 2½ tons Mulch

CACAO EXPERIMENT YIELDS,

The following tables show the yields in each of the four years since the new series was commenced. The yields are given in terms of pounds of wet cacao per plot and per acre, and cured pounds per acre. An average of 38 lb cured was obtained from 100 lb. wet cocoa.

Year.	PLOT 1. 261 lb. Mixed Fertilizer (8-10-4) No Mulch		PLOT 2. 162 lb. Nitrapo. 200 lb. Super Phosphate.		PLOT 3. 126 lb. Nitrapo. 157 lb Super Phosphate. 1,569 lb. Mulch.		PLOT 4. 4,144 lb. Mulch.		PLOT 5. 261 lb. Mixed Fertilizer. (8-10-4)	
	per plot	per acre	per plot	per acre	per plot	per acre	per plot	per acre	per plot	per acre
1922-23										
Wet Cacao	1,019	3,514	1,014	2,816½	663	2,348	1,240	3,351	1,096	3,779
Cured		1,370		1,098		1,028		1,306		1,477 ³
1923-24										
Wet Cacao	1,322	4,558	1,152	3,200	936	3,343	1,309	3,510	1,234	4,255½
Cured		1,776		1,248		1,303		1,368		1,659
1924-25										
Wet Cacao	1,188	4,096	1,023	2,841½	797	2,846	1,236	3,340½	1,035	3,569
Cured		1,597		1,107		1,109		1,302		1,331
1925-26										
Wet Cacao	1,018	3,510	769	2,136	583	2,082	1,006	2,718	855	2,878
Cured		1,333		811		791		1,032		1,093
Year.	PLOT 6. 75 lb. Nitrapo. 118 lb. Superphos 1,400 lb. Mulch.		PLOT 7. 150 lb. Cotton Seed Meal. 118 lb. Super Phosphate.		PLOT 8. 248 lb. Mixed fertilizer. (8-10-4.)		PLOT 9. 223 lb. Mixed fertilizer (8-10-4.) 4,177 lb. Mulch.		PLOT 10. 160 lb. Mixed Fertilizer. 200 lb. Lime 1 Ton Mulch.	
	per plot	per acre.	per plot.	per acre.	per plot.	per acre.	per plot.	per acre.	per plot.	per acre.
1922-23										
Wet Cacao	918	3,672	754	3,016	650	1,570	1,177	3,155½	961	2,402½
Cured		1,432		1,176		612		1,230		936
1923-24										
Wet Cacao	986	3,944	902	3,608	745	1,799½	1,049	2,789½	1,005	2,512½
Cured		1,538		1,407		701		1,087		979
1924-25										
Wet Cacao	886	3,544	610	2,240	736	1,777½	1,138	3,051	867	2,167½
Cured		1,382		873		693		1,189		845
1925-26										
Wet Cacao	819	3,276	500	2,000	830	2,004	1,259	3,378	801	2,002
Cured		1,244		760		761		1,283		760

DETAILS OF ADMINISTRATION.

Details of Administration.

EXPENDITURE.

The votes for the Agricultural Department for the year were as follows:—

	£	s.	d.
Salaries Curator, Assistant Curator			
Foreman, Clerk and Watchman	1,005	0	0
Contingencies	10	0	0
Travelling Expenses	50	0	0
Maintenance	280	0	0
Cultivation of Saleable Products	275	0	0
Fumigation of Imported Plants	5	0	0
Maintenance Public Gardens	15	0	0
Purchase of Special Manure	120	0	0
Printing Reports	40	0	0
Experiment Station	400	0	0
Purchase of Vegetable Seeds	25	0	0
Trial shipments of fruit	20	0	0
Chemicals and Apparatus	25	0	0
Telephone Rental	15	0	0
Uniform for Watchman	3	0	0
Agricultural Instruction	302	0	0
	2,590	0	0

The actual expenditure during the year under the above heads was £2,306. 0. 0.

ADDITIONAL EXPENDITURE FOR SPECIAL SERVICES.

	£	s.	d.
Travelling Agricultural Instructor	102	1	8
Tobacco Expert	266	2	6
Special Horse Allowance to Agricultural Instructor	5	18	8
House Allowance to Curator	60	0	0
Purchase of Horses	33	17	11
	468	0	9

RECEIPTS.

The receipts under the various heads were as follows:—

	£	s.	d.
Limes	671	10	10
Cacao	103	15	2
Fruit	67	13	7½
Plants	45	4	6
Vegetable Seeds	16	8	2
Nutmegs	17	1	5
Coconuts	10	11	1
Onion Seed	6	8	5½
Tobacco Seed	4	6	7
Miscellaneous	1	19	4
Laboratory Receipts	5	18	9
	950	17	2

DETAILS OF ADMINISTRATION.

STAFF CHANGES.

Mr. Joseph Jones retired from the post of Curator and Agricultural Superintendent on the 31st March, 1925.

Mr. F. G. Harcourt, late Agricultural Superintendent of Antigua, was appointed to succeed Mr. Jones and he arrived in the Presidency to take up his duties on the 23rd March, 1925.

Mr. W. G. Hutton, Clerk to the Department resigned his position on the 31st March, 1925, in order to take up the post as Assistant Manager on the Canefield Estate. He was succeeded by Mr. G. A. Winston.

Mr. A. C. Winston, formerly Produce Inspector, was appointed as an additional Travelling Agricultural Instructor.

REPAIRS TO BUILDINGS.

a new roof was put on the Building in the premises
During the year 799 letters were despatched from this office of the Department which is used as a store.

The two propagating houses in the Botanic Gardens were painted throughout.

CORRESPONDENCE AND DISTRIBUTION OF INFORMATION ON AGRICULTURAL MATTERS.

During the year 799 letter were despatched from this office of the Department and numerous Minute Papers dealt with.

Copies of a pamphlet by Hon. A. E. Collins and Mr. F. H. S. Warneford on the curing of Vanilla were distributed to planters, as also were, printed copies of a report received from the Imperial Institute on Samples of Ginger forwarded for Examination.

Other publications received and distributed are enumerated in the attached report by the Federal Department of Agriculture.

PLANT AND SEED EXCHANGE.

Contributions of seeds and plants were received from the following:—Sir Francis Watts, K.C.M.G., A. H. Green Esq., Agricultural Department Antigua, Sir H. A. A. Nicholls, Kt., C.M.G., Royal Botanic Gardens, Kew, Professor Juan Balme, M.A., F.A., Mexico D.C., Hon. A. E. Collens, F.I.C., F.C.S., Antigua, Imperial Commissioner of Agriculture, Trinidad; Agricultural Department, Hawaii; United States Department of Agriculture, Porto Rico; United States Department of Agriculture; Agricultural Department Trinidad; W. L. Lavender, Raynes Park, London; Jardin Botanique, Montevideo; T. Langerman, Miami, Florida; Agricultural Department, Montserrat.

The Department tenders its best thanks for these welcome contributions.

Seeds and plants were sent to:—Botanic Gardens, Montserrat; and Agricultural Superintendent, St. Kitts; G. A. Jones Esq., Trinidad; Agricultural Department, Antigua.

OFFICIAL VISITS ETC. TO THE DEPARTMENT.

Mr. C. A. Gomez, Curator of Botanic Gardens Montserrat, arrived in the Island on the 5th of May and sailed for Montserrat on the 9th May. During his stay Mr. Gomez addressed the Dominica Agricultural and Commercial Society on the cultivation curing, and marketing of tobacco.

Hon. A. E. Collens, F.I.C., F.C.S., Government Chemist and Superintendent of Agriculture, Leeward Islands arrived in the Island on Monday, 13th July, and sailed for Antigua on August, 5th.

Mr. F. H. S. Warneford, M.A., B.Sc., A.I.C. F.C.S., Assistant Government Chemist, Antigua, visited the Gardens on the 10th August and the 9th October whilst passing through the Presidency. He paid a more prolonged visit on the 16th November to the 4th December.

Professor Ashby, the Mycologist of the Imperial College of Agriculture, Trinidad, passed through Dominica and paid a visit to the Department on the 28th December.

The Parliamentary Delegation who were visiting the West Indies paid a visit to the Gardens on the 29th January.

AGRICULTURAL INSTRUCTION.

The system of training a number of pupils in the Department has been resuscitated. There are now four pupils receiving training and it is hoped that this number will be increased next year.

During the year an additional Travelling Instructor was appointed whose principal duty is to advise the peasants on the cultivation and marketing of their crops.

The Agricultural Superintendent on visiting the country districts addressed meetings of small holders on Agricultural matters.

VISITS TO ESTATES.

Periodical visits are made to all parts of the Island by officers of the Department. These visits enable the Department to keep in touch with the planters and to study their requirements and difficulties and to give advice on Agricultural matters generally. The services of the officers of the Department are always available when sought by planters in this direction.

The thanks of the Department are tendered for the kind hospitality of planters during these visits.

WORK IN THE LABORATORY.

LABORATORY WORK.

At the request of the Agricultural and Commercial Society the testing of lime juice etc. for private parties has again been undertaken.

The following tests were made by officers of the Department during the period 25th October to the 31st March, 1926.

A small fee is charged for all Tests made.

Raw Lime	1.
Concentrated Lime Juice	9.
Bay Oil	1.

METEOROLOGICAL RETURNS.

Temperatures and other Meteorological observations, a summary of which is given in table on another page, were recorded during the year.

RAINFALL.

The rainfall at the Botanic Gardens for 1925 amounted to 75.69 being 3.47 inches more than the previous year and .81 more than the average annual precipitation for the last twenty-eight years which is 74.88.

RAINFALL AT THE BOTANIC STATION, DOMINICA, 1900-1925.

Month.	1900.	1901.	1902.	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911.	1912.	1913.	1914.	1915.	1916.	1917.	1918.	1919.	1920.	1921.	1922.	1923.	1924.	1925.	Monthly Mean Rainfall.
January ...	2.25	4.52	2.01	3.10	7.92	3.86	3.74	4.48	1.56	2.30	5.20	11.43	8.21	7.18	3.22	1.76	10.79	5.00	6.02	7.71	7.71	6.00	6.00	6.00	6.00	7.63	4.91
February	1.15	0.88	0.43	5.61	5.58	2.56	2.04	3.82	1.16	5.02	11.42	4.09	1.32	2.32	3.56	1.01	1.00	4.40	8.73	1.52	4.76	1.02	1.30	2.30	1.90	1.95	3.16
March ...	3.56	3.27	2.69	2.44	2.16	4.38	0.90	1.96	3.68	2.08	1.16	3.11	1.69	7.29	2.23	0.81	4.52	6.74	3.32	0.69	3.80	4.46	2.80	3.46	0.66	3.50	2.97
April ...	1.29	0.25	2.80	0.57	1.61	1.90	3.18	2.66	3.08	8.12	2.86	5.00	3.38	1.57	6.15	15.75	1.22	0.47	1.86	2.36	2.2	3.66	2.26	3.77	1.46	4.0	2.88
May ...	7.62	2.05	6.86	2.11	1.58	4.32	3.78	1.61	2.21	1.92	7.30	11.16	1.55	3.46	2.58	3.65	2.65	2.91	5.9	4.60	2.38	1.54	2.64	0.13	3.18	2.76	3.89
June ...	5.59	12.18	12.89	9.02	6.00	5.54	9.46	5.51	6.16	9.00	11.26	6.54	5.44	3.49	7.27	9.17	1.82	15.31	6.91	3.88	3.48	1.96	7.14	4.18	4.42	5.80	7.26
July ...	10.50	22.96	9.74	8.91	10.38	6.10	10.10	8.00	9.22	9.86	12.60	8.08	5.83	7.57	11.83	11.84	8.23	13.70	11.28	12.61	12.08	11.18	6.08	8.20	13.64	6.23	10.41
August ..	7.34	13.53	7.41	18.41	7.69	14.18	7.30	7.49	9.41	13.42	10.22	11.43	4.88	10.93	3.98	14.74	16.58	8.53	8.46	9.64	8.76	9.30	9.26	11.44	11.28	13.88	10.41
September	5.28	5.86	8.62	9.69	11.32	8.92	19.88	11.60	7.52	6.44	8.90	15.34	3.32	8.39	7.71	11.36	6.20	15.02	4.11	7.06	8.60	6.28	10.68	4.28	4.88	9.12	8.23
October ...	6.60	4.84	5.75	12.73	10.21	9.10	8.42	7.89	5.12	13.16	3.82	7.06	7.26	10.40	5.13	8.41	10.06	2.46	6.67	7.50	12.60	9.41	2.68	9.84	10.98	12.55	7.85
November	3.49	6.43	11.20	4.17	3.13	5.48	9.58	5.98	1.96	1.36	5.40	6.91	11.20	4.28	9.41	10.05	11.28	1.92	3.36	9.02	4.62	2.44	3.00	1.06	6.86	9.60	5.77
December	3.68	4.32	7.16	14.23	4.81	5.72	2.94	8.42	7.80	5.82	7.50	7.11	6.66	2.72	9.70	8.40	3.17	1.58	5.86	6.70	5.62	4.22	6.90	1.92	13.65	2.02	5.83
Total ...	58.35	81.09	77.56	90.72	72.45	72.66	72.02	69.30	58.91	81.41	90.61	97.26	63.72	69.90	75.10	100.01	83.42	80.80	71.46	68.03	74.46	61.72	61.24	64.40	79.16	75.69	

METEOROLOGICAL RETURN.

RAINFALL RETURNS, DOMINICA, 1925.

Stations.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Totals.
Bagatielle, Soufrière	5.08	1.68	2.76	.61	4.75	7.36	6.20	10.11	9.47	11.54	13.76	4.11	77.43
Bataille ...	4.10	.34	1.40	.00	.40	6.27	3.50	11.22	6.14	7.32	8.02	1.12	49.57
Bellevue	14.37	5.96	6.36	3.62	8.90	15.11	14.17	22.13	21.17	22.86	26.61	8.35	169.61
Blanchheim	7.34	2.99	3.27	3.00	6.63	14.63	16.63	17.17	8.05	16.40	18.52	6.14	129.80
Botanical Gardens	7.88	1.95	3.50	.41	2.76	5.80	6.23	13.83	9.12	12.55	9.60	2.02	75.69
Canehall	5.09	1.59	3.09	0.00	3.32	8.14	6.27	15.68	10.26	11.06	9.51	2.05	76.14
Castle Bruce	5.30	4.60	7.20	.70	9.24	22.75	16.41	28.10	15.99	37.47	44.92	12.26	204.85
Clark Hall	10.10	2.32	1.95	1.52	1.83	8.15	13.66	19.70	10.76	12.46	11.30	4.23	98.28
Everton	9.60	2.61	4.81	1.53	5.86	9.54	9.56	17.49	15.51	17.24	15.86	2.21	111.81
Fontaine	10.00	5.00	5.22	2.34	5.42	8.10	10.78	18.17	11.63	18.26	20.61	7.19	123.01
Goodwill	7.92	1.93	3.72	.38	2.90	6.51	6.47	16.55	11.72	11.66	10.86	1.98	82.60
Governor	3.92	4.24	4.42	3.75	6.04	18.19	15.82	17.01	10.92	20.83	31.48	5.23	141.85
Hampstead	4.98	2.37	3.67	2.76	3.86	10.84	9.80	12.87	8.56	16.19	19.15	5.15	100.20
Hillsborough	7.48	1.32	2.25	.56	1.81	7.50	6.83	16.44	12.45	11.94	8.74	2.92	80.24
Moore Park	5.22	1.59	1.90	1.03	3.63	10.52	15.13	17.50	8.75	18.54	18.05	5.38	107.15
Morne Bruce	9.07	2.13	4.19	.43	2.56	6.55	7.06	14.40	10.21	14.13	10.16	2.67	83.56
Picard	14.18	2.70	3.68	.39	2.33	7.32	15.59	14.81	9.05	14.88	10.39	3.79	99.14
Pte. Mulâtre	3.03	2.48	4.76	.89	12.05	8.56	9.92	12.70	15.31	21.12	22.78	4.01	117.61
Rosalie ...	3.01	7.27	9.11	2.05	12.26	13.00	13.52	19.01	13.82	25.36	25.41	6.23	150.05
Shawford	21.36	10.55	6.25	2.23	9.65	19.42	17.23	31.55	18.95	21.44	23.20	6.79	188.62
Sherwood	16.88	4.91	5.05	3.26	6.58	18.08	20.09	33.36	20.60	23.67	23.81	13.90	190.19
Soufrière	5.39	2.92	3.14	1.45	5.57	7.77	7.75	11.30	11.87	15.32	15.28	4.05	91.81
St. Aromant	11.36	2.90	4.37	.51	3.55	8.15	9.01	16.23	10.33	14.14	11.66	4.41	96.62
Stowe ...	6.65	4.11	3.37	1.84	9.04	9.57	10.14	13.88	13.58	16.86	19.48	5.86	114.38

Mean Rainfall	24 Stations	...	114.63
"	11 Leeward Stations	...	87.41
"	4 Windward	...	137.48
"	5 Inland	...	153.94
"	4 Lasoye	...	117.50

METEOROLOGICAL REGISTER.

KEPT AT BOTANIC GARDENS, DOMINICA.

METEOROLOGICAL RETURN.

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Months. 1925.	Thermometer.			Relative Humidity.		Thermo- meter.		Bar. Corrected. Reduced to 32° Fh. and Sea Level.		Rainfall	Barometer Corrected.		Thermometer.		REMARKS.	
	Dry.		Wet.	Humidity.		Maximum.	Minimum.	9 a.m.	3 p.m.	.	Highest	Lowest.	Highest Maximum.	Lowest Minimum.		
	9 a.m.	3 p.m.	9 a.m.	3 p.m.												
	9 a.m.	3 p.m.	9 a.m.	3 p.m.	9 a.m.	3 p.m.	9 a.m.	3 p.m.	9 a.m.	3 p.m.	9 a.m.	3 p.m.	9 a.m.	3 p.m.		9 a.m.
January	74.6	77.4	79.2	70.0	78.2	65.7	84.8	67.7	30.07	29.99	7.88	30.14	29.93	88	65	9th sharp earth- quake shock at 3 p.m.
February	76.0	80.0	70.8	71.5	74.6	62.0	86.8	66.8	30.02	29.93	1.95	20.09	29.88	90	64	
March	75.7	79.59	70.6	71.4	70.9	63.2	86.7	67.5	29.98	29.91	3.50	30.09	29.84	91	63	
April	81.6	83.90	72.66	72.6	59.1	52.7	91.6	69.6	29.93	29.91	.40	30.03	29.86	95	67	
May	81.0	84.7	73.7	72.8	66.8	50.8	92.0	71.0	30.00	29.94	2.76	30.11	29.89	96	66	
June	81.7	83.5	74.1	73.7	66.5	58.3	89.7	71.0	30.00	29.96	5.80	30.09	29.91	94	69	
July	80.7	83.2	74.9	75.2	74.0	62.5	90.1	71.6	30.01	29.95	6.23	30.10	29.83	93	69	
August	81.2	82.8	75.2	75.6	73.0	66.7	89.9	73.5	29.98	29.95	13.88	30.02	29.88	93	70	
September	80.7	83.5	76.0	75.7	76.3	65.4	89.7	72.3	29.98	29.88	9.12	30.05	29.82	93	70	
October	81.1	82.2	75.8	75.4	75.3	69.5	90.5	71.9	29.96	29.89	12.55	30.01	29.80	98	69	
November	79.8	80.8	74.9	74.5	76.8	71.3	87.6	71.2	29.91	29.90	9.60	30.02	29.83	92	69	
December	77.8	80.5	72.7	73.2	70.4	67.4	88.6	68.4	30.00	29.92	2.02	30.05	29.84	91.5	66	

Highest Maximum Temperature = 98° on October 15 and 16. Lowest Minimum Temperature = 63° on March 4.
Highest Barometer (Corrected) = 30.14 on January 22. Lowest Barometer (Corrected) 29.80 on October 30.
Greatest Rainfall in 24 hours = 3.65 inches on October 29.

Miscellaneous Notes.

Mr. Joseph Jones.

Mr. Joseph Jones retired from the post of Curator and Agricultural Superintendent on the 31st March, 1925 after thirty-three years of valuable service to Dominica. Mr. Jones took up his duties in Dominica in March, 1892, about twelve months after the purchase by the Government of the present site of the Botanic Gardens. His long service in the Island has enabled him to see the result of his labours in the development of the Botanic Gardens now generally acclaimed as being the most interesting and attractive in the West Indies.

As an appreciation of Mr. Jones's personality and the valuable services rendered to Dominica a most pleasant function took place in the Botanic Gardens on April 28th when Mr. Jones was presented with an address together with a Salver and a Purse.

The "Dominica Chronicle" May 2nd, 1925, contains the following interesting paragraph:—

"A most pleasant function took place at the Botanic Gardens on Tuesday afternoon, when, in the presence of a representative gathering, an Address together with a Salver and a Purse was presented to Mr. Jones, the retired Curator in appreciation of the valuable service he has rendered to the Island of Dominica during the past 34 years. The idea of thus publicly acknowledging the merits of Mr. Jones originated from the Dominica Agricultural and Commercial Society. Speeches were made by Mr. Rose, His Honour the Administrator and Mr. Macintyre all expressing the greatest appreciation of Mr. Jones's services. The Address was read by Mr. Seaford.

"In replying Mr. Jones said he was too deeply moved to be able to make any speech at this moment but from his heart he wished to thank all for their great kindness towards him.

"The function terminated by three cheers being heartily given for Mr. Jones."

The late Sir H. A. Alford Nicholls, Kt., C.M.G.

The death of Sir H. A. Alford Nicholls, Kt., C.M.G. so shortly after the honour of Knighthood had been conferred upon him is a sad loss to the Presidency of Dominica. For nearly fifty years Dr. Nicholls had resided in the Island and rendered valuable medical service, and since 1904 he had acted as Principal Medical Officer of Dominica. It is, however, on account of Dr. Nicholls' interest in agricultural and botanical matters that this Department wishes to pay a tribute of respect to his memory.

For many years Dr. Nicholls showed an active interest in the Agricultural Department, and was a constant correspondent of Kew on botanical and agricultural matters affecting the welfare of Dominica and the encouragement and progress of every kind of agricultural enterprise was his chief interest or rather recreation, whenever his Medical duties would allow.

F. G. HARCOURT,
Curator & Agricultural Superintendent, Dominica.

Chemical and other Investigations affecting Dominica carried out by the Federal Agricultural Department during the Period.

August 1, 1924 to March 31, 1926.

During the period under review three official visits were paid to Dominica by Officers of the Federal Agricultural Department, two visits being made by the Government Chemist and Superintendent of Agriculture and one visit by the Assistant Government Chemist. During these visits analytical work and certain special investigations were conducted in the Laboratory at the Botanic Gardens.

Analyses and investigations were also made at the Federal Laboratory in Antigua, while a certain amount of consultation work was undertaken, especially during the visits to Dominica.

When necessary or at special request outlying districts were visited on several occasions and various problems investigated on the spot.

The following is a summary of the samples analysed:—

Bay Oil (Phenol Content)	..	..	10
Raw Lime Juice (Total Acid)	..	..	2
Raw Lime Juice (True Citric Acid)	..	..	1
Concentrated Lime Juice (Total Acid)	..	..	4
Concentrated Lime Juice (Malic Acid)	..	..	2
Sweetened Lime Juice	..	..	7
Sugar	..	..	2
Milk	..	..	1
Soap	..	..	1
Rum	..	..	5
Mango Rum	..	..	2
Wine	..	..	2
Manures	..	..	2
Water	..	..	1
Tobacco Leaf (Ash constituents)	..	..	1
Limequat	..	..	1
Woglums Seedless Lemon	..	..	1
Rangpur Lime	..	..	3
Normal Alkali	..	..	1
5% Caustic Soda	..	..	4

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SPECIAL INVESTIGATIONS.

The samples of sweetened lime juice were analysed for the Treasury in connection with a refund on duty paid sugar exported from the island in Sweetened juice.

The Limequat, Woglums seedless lemon and the Rangpur lime were analysed in connection with the investigation with various varieties of citrus with a view to the selection of a suitable resistant variety to replace the West Indian lime in districts in which it cannot be profitably grown since the introduction of withertip.

As the results obtained may be of general interest they are shown in the following table:—

Fruit	Yield of juice.	Total acid in juice. (ozs. per gallon)	True citric acid in juice. (ozs. per gallon)
Woglums seedless lemon	53.0%	10.1	9.75
Rangpur lime (ripe)	41.7%	9.5	
Rangpur lime (turning)	45.8%	9.5	
Rangpur lime (green)	42.6%	11.8	
Eustis limequat	39.6%	12.0	

With the exception of the limequat, which is a very small fruit and of the green Rangpur lime which is also undersized the acid content is too low for these varieties to be of much commercial value. It will be observed that the Rangpur lime is not a true lime: it is related to the Mandarin group hence the higher degree of acidity in the unripe fruit than in the ripe.

Special Investigations.

CITRUS INDUSTRY.

During the period under review, two investigations in connection with the citrus industry were completed, the results being published and distributed among planters in Dominica (see list of publications).

The investigation into the preparation of citrus pectin from lime skins has been continued—a progress report and samples of the pectin produced have been sent to a planter who expressed interest in the matter.

BAY INDUSTRY.

Considerable attention has been given to the bay industry, particularly in connection with the question of certain abnormal bay oils of low phenol content produced in one district of the island. A careful investigation of the conditions of distillation indicated that faulty distillation practice was not the cause of the abnormality, which was due to the nature of the leaves used. It has since been determined by the local Department of Agriculture that the majority of bay trees in the district are varieties other than the true *pimenta acris*.

In connection with the production of bay rum, experiments have been conducted on the recovery of silent spirit from ordinary rum and the details of the process communicated to the interested parties.

SPECIAL INVESTIGATIONS.

COCONUT INDUSTRY.

Information as to the preparation of copra has been given to one planter and the manufacture of a filled coconut oil soap has been investigated for another.

It has been found that finely ground Nevis kaolin makes a satisfactory filler for use in a cold process coconut oil soap, considerably increasing the weight of soap obtained without rendering the soap gritty or in anyway unpleasant to use.

GINGER INDUSTRY.

An investigation has been conducted on the drying of ginger by hot air. A satisfactory product is obtained when the peeled and washed rhizomes are dried in a current of air at 122 F to 131 F. The colour of the cured ginger is improved by treatment with milk of lime followed by sulphur dioxide, either before the drying process or when this is completed. In the latter case a second short drying period is required to remove the surface moisture.

OIL SEEDS.

Information has been given in connection with various oil seeds more especially the Illipe nut (*Shorea stenoptera*, *Hopea*, *Isoptera* and other varieties of Dipterocarpaceae). These trees whose natural habitat is Borneo, Java, and Sumatra yield an edible fat which is used to some extent as a substitute for cocoa butter.

FRUIT CANNING.

Information was given the Agricultural Superintendent in connection with fruit canning especially in connection with mangoes and pine-apples and a type of canning outfit suitable for experimental work was recommended.

MEAT AND FISH CURING.

Full details of the methods of curing hams and bacon and also fish were supplied to the Agricultural Superintendent and also a list of all available literature on the subject. The Government of the Madras Presidency has also been asked to forward copies of a special pamphlet on the subject by Sir Frederick Nicholson "The preservation and curing of Fish."

VANILLA LEGISLATION.

At the request of the Agricultural Superintendent for information as to any existing legislation as to the control of the sale of vanilla full details of the rules and regulations in force in Guadeloupe were obtained and forwarded to the local Agricultural Department.

PUBLICATIONS.

During the period under review the following pamphlets were published locally.

"Bay oil and Bay rum" by the Government Chemist and Assistant Chemist.

"Pine-apple Growing" by the Government Chemist, the Assistant Chemist and F. G. Harecourt, F.R.H.S. at the time Agricultural Superintendent, Antigua.

"Vanilla" by the Government Chemist and the Assistant Chemist.

"Some Notes on Pastures and their Improvement" by the Government Chemist.

Reprints of the following papers were also circulated among planters likely to be interested.

"The Extension of certain Citrus By-products (with particular reference to the citrus industry in Dominica) by the Assistant Chemist. (published in the proceedings of the Ninth West Indian Agricultural Conference).
"The Colouring matter of Lime Juice" by the Assistant Chemist in collaboration with Professor Hardy of the Imperial College Tropical Agriculture (published in the Journal of Industrial and Engineering Chemistry, Jan. 1925).

"Manufacture of Calcium citrate and Citric acid from Lime Juice" by the Assistant Chemist in collaboration with Professor Hardy of the Imperial College of Tropical Agriculture (published in the Journal of Industrial and Engineering Chemistry, December 1925).



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- Volumes XIII No. 2 Containing Papers on SUGAR-CANE EXPERIMENTS IN BRITISH GUIANA, prepared for the recent Agricultural Conference.
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- Volume XIV. No. 1.—Containing Papers on PEASANT AGRICULTURE IN THE WEST INDIES.
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- Volume XIV. No. 3.—Containing Papers on VETERINARY SCIENCE, AGRICULTURAL EDUCATION, ANALYTICAL METHODS, and PESTS AND DISEASES.
- Volume XIV. No. 4.—Containing Papers on WEST INDIAN INDUSTRIES, WATER-SUPPLY, and PLANT DISEASES.
- Volume XV. Nos. 1, 2, and 3.—Containing Papers on General Subjects.
- Volume XV. No. 4.—Containing an account of the Proceedings of the West Indian Cotton Conference 1916.
- Volume XVI. Nos. 1, 2, 3 and 4.—Containing Papers on General Subjects.
- Volume VII. Nos. 1, 2, 3, and 4.—Containing Papers on General Subjects, especially cotton.
- Volume XVIII. Nos. 1, 2, 3, and 4.—Containing Tropical Agricultural College Committee's Report and Papers on Miscellaneous Subjects.

PAMPHLET SERIES

The following list gives particulars of the chief pamphlets issued by the Imperial Department of Agriculture that are still available:—

- SUGAR INDUSTRY.
- Seedling and other Canes at Barbados, 1900-4.
- Seedling Canes and Manurial Experiments at Barbados.
- | | | |
|--------------------|--------------------|-------------------|
| in 1903-5, No. 40, | in 1904-6, No. 44, | } price 6d. each, |
| in 1905-7, No. 49, | in 1906-8, No. 59, | |
| in 1907-9, No. 62, | in 1908-10 No. 66, | |
- Seedling and other Canes in the Leeward Islands.
- | | | |
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| in 1900-1, No. 12, | in 1901-2, No. 20, | } price 2d. each. |
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| in 1903-4, No. 33, | in 1904-5, No. 36, | } price 4d. each. |
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| in 1907-8, No. 56, | | |
| in 1908-9, No. 63, | in 1906-10, No. 67— | price 6d. each |
- Manurial Experiments with Sugar-cane in the Leeward Islands.
- | | | |
|--------------------|---------------------|-------------------|
| in 1902-3, No. 30, | in 1903-4, No. 39, | } price 4d. each, |
| in 1904-5, No. 42, | in 1905-6, No. 47, | |
| in 1906-7, No. 51, | in 1907-8, No. 57, | |
| in 1908-9, No. 64, | in 1909-10, No. 68, | |
- Sugar-cane Experiments in the Leeward Islands.
- in 1910-11 price 1s.; price 1s.
- SCALE INSECTS.
- Scale insects of the Lesser Antilles Part I, No. 7 price 4s.
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- (79) Diseases of Lime Trees in Forest Districts. Price 3d.
- (80) Hints to Settlers. St. Lucia. Price 6d.
- (81) Agricultural and Economic Resources of St. Lucia. Price 3d.

The above will be supplied post free for an additional charge of 1d. for the pamphlets marked 2s.; 1d. for those marked 4d. and 1½d. for Nos. 43, 44, 49, 59, 62, 63, 67, 73, 74 and 75. 2d. for No. 72 and 4d. for No. 71.

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